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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TUMAY O. TUMER

Appeal 2010-004169
Application 09/396,352
Technology Center 2600

Before MICHAEL R. ZECHER, BRUCE R. WINSOR, and JULIE K. BROCKETTI, *Administrative Patent Judges*.

WINSOR, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134(a) from a Final Rejection of claims 27, 28, 33-52, 54-84, 87, and 90-109, which constitute all the claims pending in this application. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

STATEMENT OF THE CASE

Appellant's invention relates to smart tags (Spec. 3:21-22). An application specific integrated circuit chip includes an antenna that receives energy from an outside source and charges capacitors on the chip in order to power the chip itself. (Abstract). The chip communicates through the antenna to outside receivers to identify the chip and a bag or other article to which the chip is attached. (*id*). Claim 75, which is illustrative of the invention, reads as follows:

75. A tag comprising an integrated circuit that includes:

a [sic] antenna that receives an electromagnetic wave;

a signal receiving system that receives and stores input data derived from the wave;

a separate power storage component that receives and stores sufficient energy to power the integrated circuit; and

electronics that transmits [sic] at least a portion of the input data externally to the tag.

The Examiner relies on the following prior art in rejecting the claims:

Carroll	US 4,857,893	Aug. 15, 1989
Kip	US 5,105,190	Apr. 14, 1992
Roth	US 5,272,117	Dec. 21, 1993
Carney	US 5,446,447	Aug. 29, 1995
Moskowitz	US 5,528,222	June 18, 1996
Schoenian	US 5,748,106	May 5, 1998
Tuttle	US 5,779,839	July 14, 1998

Claims 75, 76, 78-81, 83, 84, 90-96, and 100 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kip in view of Carroll.

Claims 27, 28, 33-44, 48-52, 54-64, 68-74, 77, 87, 102, 103, and 107-109 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kip in view of Moskowitz and Carroll.

Claim 101stands rejected under 35 U.S.C. § 103(a) as unpatentable over Kip in view of Carroll and Tuttle.

Claims 104-106 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kip in view of Moskowitz, Carroll, and Tuttle.

Claim 97 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Kip in view of Carroll and Roth.

Claims 45 and 65 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kip in view of Moskowitz, Carroll, and Roth.

Claims 46, 47, 66, and 67 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kip, Moskowitz, and Carroll in view of Schoenian.

Claims 98 and 99 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kip and Carroll in view of Schoenian

Claim 82 stands rejected under 35 U.S.C. § 103(a) as unpatentable over Kip, Moskowitz, and Carroll in view of Carney.

Rather than repeat the arguments here, we make reference to the Briefs (App. Br. filed Apr. 3, 2009; Claims Appendix filed May 20, 2009; Reply Br. filed Sept.14, 2009) and the Answer (mailed July 13, 2009) for the respective positions of Appellant and the Examiner. Only those arguments actually made by Appellant in the identified Briefs have been considered in

this decision.[1] Arguments that Appellant did not make in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

ISSUE(S)

Appellant argues the patentability of independent claim 75 and dependent claims 76, 78-81, 83, 84, 90-96, and 100 over the combination of Kip and Carroll (App. Br. 9-10; Reply Br. 1-2) . The substance of Appellant's remaining arguments (App. Br. 11-13; Reply Br. 2-3), including those presented for independent claims 27 and 28 (App. Br. 11), is that none of the other prior art cited by the Examiner cures the alleged deficiencies in the combination of Kip and Carroll. Therefore, we select claim 75 as the representative claim, pursuant to our authority under 37 C.F.R. § 41.37(c)(1)(vii).

Appellant summarizes Appellant's arguments for the patentability of claim 75 as follows:

> The appellant offers two main arguments in this case. First, the examiner failed to establish a *prima facie* showing of obviousness. Among other things, the examiner failed to identify any teaching, suggestion, or motivation in the prior to combine the references in a manner that would satisfy all of the elements of the pending claims. Nor can he. The only reference that has an on-chip antenna, Carroll, is completely silent as to whether the antenna could provide sufficient power to operate the chip, and instead teaches that its chip is powered

[1] The Appeal Brief filed May 30, 2006, Answer mailed July 20, 2006, and Reply Brief filed September 19, 2007, were not considered in view of the Appeal Brief filed April 3, 2009, in response to the Notification of Non-Compliant Appeal Brief (37 C.F.R. § 41.37) mailed March 6, 2009, which is deemed to have replaced and superseded Appellant's previous briefs.

> by an external battery. The other references Kip and Moskowitz, fail to teach that a single on-board antenna could provide such power.
>
> Second, even if the examiner had established a *prima facie* showing of obviousness, and even if the references did contain among them all of the elements of the pending claims, the rejections on obviousness would still be inappropriate because one of ordinary skill in the art would have expected the claimed combinations to fail. The reason is that such a person would have expected that the combination to fail: (1) an antenna disposed on an IC would produce insufficient power to operate the IC; and (2) an on-chip component would be unable to store enough energy to power the chip. The proof is that every embodiment in the prior art used either a second, off-chip antenna or an external power source.

(App. Br. 10.)

The pivotal issues presented by Appellant's arguments (*see* App. Br. 10) are:

Does Carroll teach or suggest an integrated circuit chip having an on-chip antenna to receive an electromagnetic wave and on-chip capacitance to receive and store sufficient energy to power the chip?

Would a person of ordinary skill in the art be motivated to combine Carroll and Kip?

FINDINGS OF FACT (FF)

Carroll

1. Carroll discloses a transponder device in which the entire transponder device, including a receiving and transmitting antenna coil and power circuits are realized on a single semiconductor chip (col. 3, ll. 27-31).

2. Carroll discloses that the transponder device has the antenna coil 20 formed on a substrate 98 in a single monolithic integrated circuit chip assembly (Fig. 9A, 9B; col. 11, ll. 44-48).

3. Carroll discloses that the antenna coil 20 is placed around the periphery of the integrated circuit chip substrate 98, with remaining circuitry 100, 102, and 104 of the transponder unit 14 placed in the center of the coil, so that a functionally complete transponder unit is realized (Fig. 9A, 9B; col. 11, ll. 11-27).

4. Carroll discloses that a carrier signal is rectified to generate operating power (Abstract; col 3, ll. 37-44; *see also* col. 6, ll. 38-43) and that operating power is stored in capacitance C1 present on the chip (col. 8, ll. 3-10).

5. Carroll discloses that the single chip transponder unit 14 may be converted to a more conventional transponder by the addition of a battery B1 and other components (Fig. 7; col. 10, ll. 32-51).

6. Carroll discloses that a very small, inexpensive, reliable transponder device may be realized on a single monolithic semiconductor chip that may be incorporated into a very small lightweight tag (Col. 3, ll. 11-20).

Kip

7. Kip discloses an electromagnetic identification system responder 4 (Fig. 2; col. 2, ll. 57-62) having a buffer capacitor 8 (Fig, 1, 2; col. 2, l. 27; col. 3, ll. 17-22) as a part of an energy supply circuit that supplies energy to the responder when it is in an interrogation field (col. 2, ll. 24 – 27).

Appellant's Specification

8. Appellant's specification discloses a receiver circuit formed from a closed loop antenna with several turns running around the perimeter of the integrated circuit (Spec. 43:6-8).

ANALYSIS

We find that Carroll discloses an on-chip antenna that provides sufficient power to operate the chip (FF1, 2, 3, 4; *see* Ans. 3-4, 20-21) and on-chip capacitance able to store enough energy to power the chip (FF 1, 4; *see* Ans. 3-4, 20-21). Kip teaches that the circuit capacitance may be a separate component of the circuit (FF 7; *see* Ans. 3). Appellant's contention (App. Br. 10; Reply Br. 3) that Carroll only discloses a battery powered circuit is mistaken (FF 1, 4), as the battery powered embodiment referred to by Appellant (Carroll, Fig. 7) is an alternative embodiment of Carroll's transponder (FF 5; Ans. 20) and not the embodiment relied upon by the Examiner.

We further find that a person skilled in the art would be motivated to improve Kip's electromagnetic identification system responder, as Carroll's benefits of a small, inexpensive, reliable, device that may be incorporated into a very small lightweight tag (FF 6; *see also* Ans. 4) would improve Kip's device in the same way. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). We also find, contrary to Appellant's contention (App. Br. 10), that in light of Carroll's disclosure of a transponder powered by energy received by an on-chip transponder and stored by on-chip capacitance, a person skilled in the art would consider it predictable that the combination of Kip and Carroll would succeed (Ans. 20-21) and that such a combination of

teachings would be within the skill of the ordinarily skilled person. *See KSR,* 550 U.S. at 417.

Appellant further contends (Reply Br. 1-2: *but see,* App. Br. 10) that Carroll does not disclose an on-chip antenna, but rather an antenna coiled around Carroll's integrated circuit, connected to exterior pins 5, 6 of the integrated circuit (Reply Br. 2) and further that a person skilled in the art would not expect an antenna included within an integrated circuit to provide the same amount of power (*id*). We disagree. We note that the configuration (*see* FF 3) of Carroll's antenna on Carroll's chip (FF 1, 2, 3) is similar or identical to one described in Appellant's Specification (FF 8; *see also* Claims 78, 102, 103, and 107). In view of Carroll's explicit teaching of forming the antenna on the integrated circuit chip (FF 1, 2, 3), we find no relevance in Carroll's schematic representation of signal access pins (Carroll, Fig. 5,6) interposed in the connection between the antenna and the remaining circuitry on the integrated circuit (*see* Reply Br. 2). Finally, contrary to Appellants' contention (Reply Br. 2), the Examiner has not asserted that Carroll teaches a battery included in the integrated circuit. Rather, the Examiner's implicit finding is that Carroll teaches energy storage (i.e., capacitance) included in the integrated circuit (*see* Ans. 20-21).

We adopt the Examiner's findings (Ans. 3-4) and explanations (Ans. 19-21) as our own. We conclude that the Examiner has established a prima facie case of the unpatentability of claim 75. Accordingly, we sustain the rejection of claim 75 and of claims 27, 28, 33-52, 54-74, 76-84, 87, and 90-109.

DECISION

The decision of the Examiner to reject claims 27, 28, 33-52, 54-84, 87, and 90-109 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2010).

AFFIRMED

msc